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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,328	01/16/2001	Shigetsugu Hayashi	201638US0DIV	3154

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ALEXANDRIA, VA 22314

EXAMINER

JUSKA, CHERYL ANN

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 02/13/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/759,328

Applicant(s)

HAYASHI ET AL.

Examiner

Cheryl Juska

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 16 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 15, 16 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15, 16 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/065,098.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 6) ☐ Other

Art Unit: 1771

DETAILED ACTION

Response to Amendment

1. The copy of Preliminary Amendment A originally filed on January 16, 2001, has been entered. Amendment A was first submitted with the original application papers (see copy of USPTO receipt of application papers attached to the copy of Amendment A). Accordingly, the Notice of Non-Compliant Amendment filed on January 7, 2003, is hereby withdrawn due to said amendment having been originally submitted prior to the new rules for amendment submittal requiring a clean version and mark-up version of claims. Additionally, in view of Amendment A, the restriction requirement of October 2, 2002, is hereby withdrawn.

2. The specification has been amended as requested in Preliminary Amendment A. additionally, claims 1-14, 17, and 18 have been cancelled. Thus, the pending claims are 15, 16, and 19.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 15, 16, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 1771

5. Claim 15 is indefinite for the use of the phrase "(reinforcement fibers)." Due to the use of parentheses, it is unclear if said fibers are the same or different from the high strength and elastic fibers.
6. Claim 16 is indefinite for the use of the term "high molecular compound." It is unclear if Applicant intends to encompass a high molecular *weight* compound (i.e., a polymer).
7. Claim 19 is indefinite for the lack of antecedent basis of the term "the reactive mixture."

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,020,275 issued to Stevenson et al.

Claim 15 is drawn to an anisotropic textile comprising (a) warp yarns having a tensile strength of 3 GPa or more and an elastic modulus of 150 GPa or more and (b) composite weft yarns comprising two fibers having a difference in melting point temperature of 50°C or more, wherein said weft yarns have a lower modulus than the warp yarns. The weft yarns have a weight of 0.1 g or less per meter (less than or equal to 900 denier) and are spaced apart by 3-15 mm. The warp and weft are bonded by means of the lower melting point fibers of the weft.

Claim 16 limits (i) the high melting point fibers of the weft to having a modulus of 50-100 GPa and a T_m of 200°C or more and (ii) the low melting point fibers of the weft to having a

Art Unit: 1771

modulus of 50 GPa or less and a T_m or 150°C or less. The weft yarns are unified by deposition of 0.5-10 % by weight of a polymeric compound having a melting or softening temperature of 150°C or less.

Claim 19 limits the polymeric compound to being soluble in a reactive resin mixture which is later applied to said anisotropic textile during a method of repairing an existing structure.

Stevenson discloses a bonded composite open mesh structural textile comprising at least two components (abstract). Said textile comprises (a) a load bearing yarn, (b) a bonding yarn, and (c) an optional bulking yarn (abstract). The load bearing yarn is a multi- or monofilament having a high tenacity, high initial modulus, and low elongation (col. 4, lines 15-19). The load bearing yarns may be polyester, nylon, aramid, or fiberglass (col. 10, lines 17-22) and have a strength of at least 5 g/den, a Young's modulus of at least 100 g/den, and an elongation of less than 18% (col. 10, lines 23-30). Said load bearing yarns may have a denier of about 1000 to 2000 (col. 10, lines 30-32).

The bonding yarn may be incorporated into the textile by (i) a fusible bicomponent yarn having a high melting core and a low melting sheath as the warp and/or weft yarns, (ii) a polymer coated onto said textile, or (iii) a combination thereof (col. 4, line 61-col. 5, line 8). In the first instance, the woven textile is heated to melt the fusible component, thereby bonding the junctions of the warps and wefts (col. 5, lines 9-16). The fusible yarn is preferably a bicomponent yarn of a low melting sheath, such as polyethylene, and a high melting core, such as polyester (col. 10, lines 52-55).

Art Unit: 1771

The warps and wefts are interwoven at spaced intervals to create a mesh fabric (col. 8, lines 31-42) having openings of about $\frac{3}{4}$ to 1 inch (col. 9, lines 10-16), yet said openings may be modified according to the desired performance requirements (col. 9, lines 23-27). The textile may be made with a greater strength in either the lateral or longitudinal direction (i.e., anisotropic) based upon the requirements of the end application (col. 10, lines 33-39). The invention may be modified for various applications by selection of type and number of load bearing yarns and bonding yarns (col. 5, lines 27-35).

Thus, Stevenson teaches the present invention of claims 15 and 16 with the exception of (a) the claimed tensile strength and modulus, (b) the claimed weight per meter (i.e., denier), (c) the difference in melting temperature, (d) the spacing of weft yarns, and (e) weight percent of polymeric material binding the weft yarns.

With respect to the first exception, it is argued that Stevenson teaches like materials, such as aramid and fiberglass fibers. Since, these strength and modulus properties are inherent to fiber materials, these limitations are inherently met by Stevenson's disclosure to like fibers.

With respect to the claimed denier, spacing, and weight percent, Stevenson explicitly teaches it would have been obvious to vary these structural properties depending upon the end use of the textile. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to the temperature difference, it is argued that similar materials are employed by both Stevenson and Applicant. Additionally, it is argued that the degree by which a low melting component differs from a high melting component requires only routine

Art Unit: 1771

experimentation by one skilled in the art. Thus, it is asserted that these five exceptions would have been obvious to one skilled in the art over the cited Stevenson reference.

With respect to the limitation of claim 19, it is asserted that said limitation is not given patentable weight at this time, since "the reactive mixture" is not a defined or positively recited structural feature of the anisotropic textile. Additionally, it is asserted that said "high molecular compound" is capable of being dissolved in a resin mixture which may be later applied to the anisotropic textile. Therefore, claims 15, 16, and 19 are rejected as being obvious over the prior art.

Conclusion

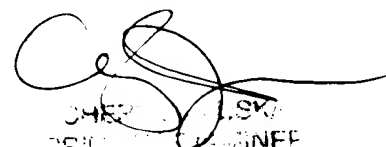
10. The art made of record and not relied upon is considered pertinent to Applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Cheryl Juska whose telephone number is 703-305-4472. The Examiner can normally be reached on Monday-Friday 10am-6pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

cj
February 9, 2003



CHERYL JUSKA
EXAMINER